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January 7, 2008

Jane R. Summerson
M. Lee Bishop
Environmental Impact Statement Office
U.S. Department of Energy
Office of Civilian Radioactive Waste Management
1551 Hillshire Drive
Las Vegas, NV 89134

Re: Comments on draft Repository Supplemental Environmental Impact Statement and draft Nevada Rail Corridor/Alignment Environmental Impact Statement

Dear Ms. Summerson and Mr. Bishop,

H(O)ME is a California §501(c)(3) nonprofit corporation, founded in 2000 to conduct independent research and public education on issues of military and civilian nuclear industries and their impacts on health and habitat, particularly in the Nevada Test Site and Yucca Mountain region. Members of our board of directors have been involved in analyzing the Proposed Yucca Mountain Nuclear Waste Repository since the inception of the Nuclear Waste Policy Act. We have conducted recent independent studies of groundwater radionuclide baseline data in Amargosa Valley, as well as the transportation of all hazardous waste on California Routes 127 and 178 in southeast Inyo County. Disc copies are included as part and in support of these comments on the SEIS documents.

In preparing our response to the U.S. Department of Energy's (DOE) draft Repository Supplemental Environmental Impact Statement (SEIS) and draft Nevada Rail Corridor/Alignment Environmental Impact Statement, we have identified several issues regarding both documents that should be addressed by the DOE in the course of developing both Final Environmental Impact Statements (EIS).

Draft Repository Supplemental Environmental Impact Statement

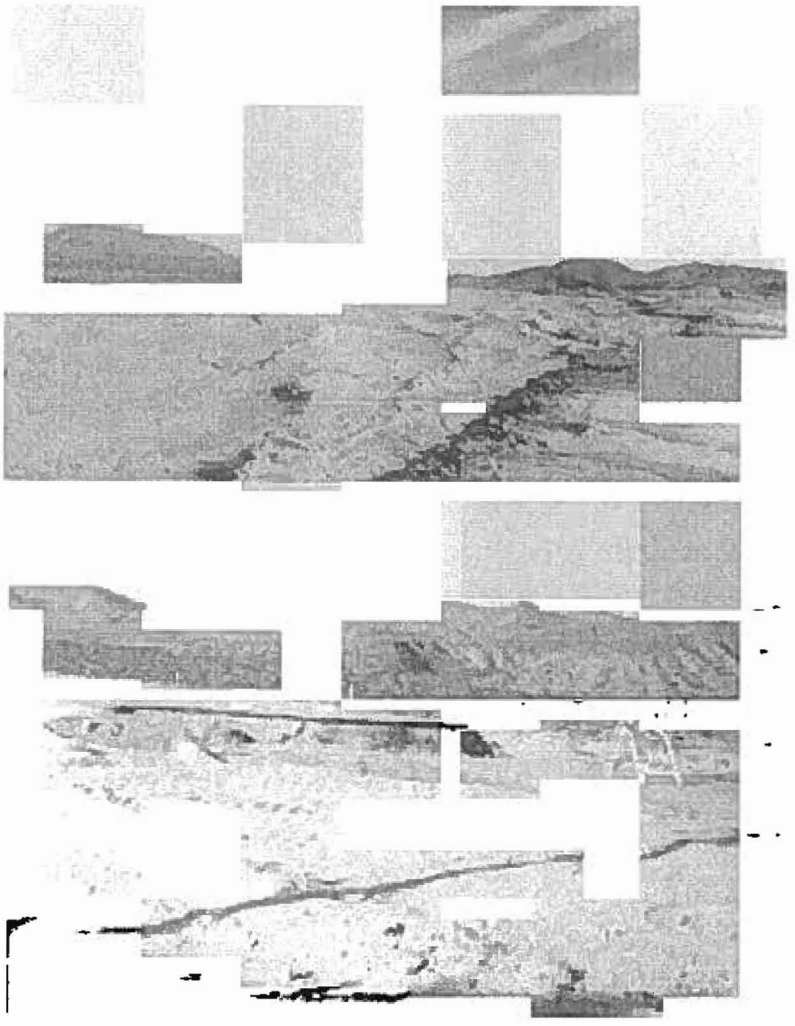
1 **Inadequate analysis of groundwater impacts to California**

Through geochemical analysis, Inyo County, California, has amassed a body of strong scientific evidence that the Lower Carbonate Aquifer (LCA), which underlies the repository, has several discharge points on the western side of the Funeral Mountains in the Furnace Creek area of Death Valley National Park (Park). The draft SEIS does not make adequate use of this vital body of information in its analysis, and in once instance, seems to misinterpret Inyo's research by confusing

the impacts on the LCA and volcanic aquifers. This error incorrectly minimizes and mischaracterizes potential impacts to Death Valley and California residents, visitors and wildlife in general.

California is only 17 miles down gradient from the repository site, and yet DOE continues to omit it from maps and analysis of potential impacts. H(*)ME has repeatedly commented throughout the EIS process that DOE's estimates on future impacts of the proposed repository are grossly negligent in that they completely omit potential impacts to California, either through ground and surface water contamination or through the LCA. This draft SEIS still makes no predictions, based on water infiltration, waste package corrosion rates or groundwater migration times, of the impacts to the LCA or its discharges points in or near California. Accordingly, the draft SEIS contain no impact assessment for plant life, wildlife, wildlife habitat or drinking water supplies in California that could potentially be impacted by migrating radionuclides from the repository. Rather than paraphrase them, we refer you to Inyo County's extensive comments on the draft SEIS, and strongly support them in full detail.

DOE does concede that California will be impacted from contaminants in the volcanic aquifers, with radionuclides in the volcanic aquifers surfacing at Alkali Flat, near Death Valley Junction, California. However, the DOE predicts this will happen after any applicable compliance period, and does not make further reference to where contaminants will go from there. We believe that DOE's own modeling suggests leakage to be likely far sooner than that. As local residents, we are well aware



The photograph at the top left, taken by Susan Sorrells in August, 1983, shows water that has drained from Death Valley Junction through the area in question, and is flowing south along the west side of Eagle Mountain, bisecting and completely removing at least 300 feet of Highway 127.

Bottom left, photo taken later by Karen Lutze: This flooding resulted in closure of Highway 127 for several months while new culvert pipe, gravel fill and asphalt surfacing were laid by Caltrans.

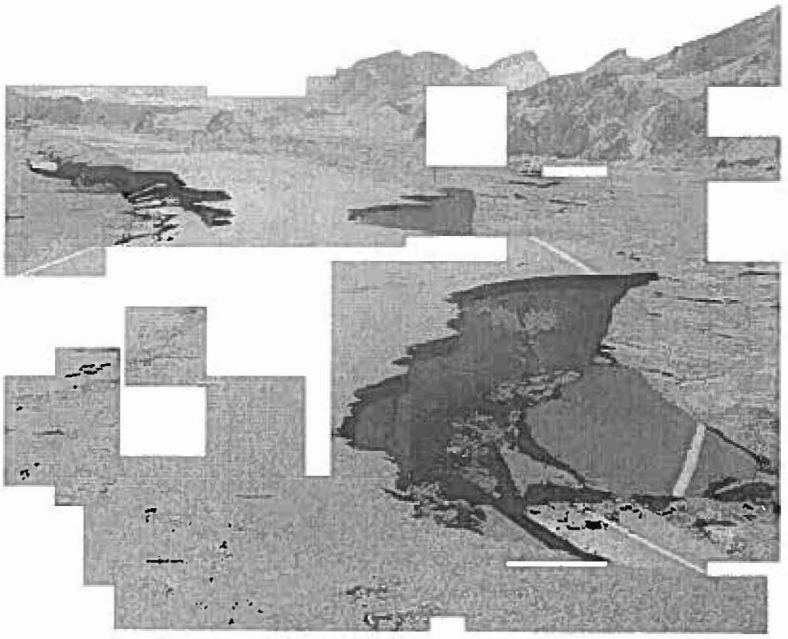
that flash floods regularly carry water and contaminants at the rate of four to six miles per hour from the Alkali Flat area south into Shoshone and Tecopa and on to Death Valley via the Amargosa River drainage.

DOE also concedes that Death Valley proper is the regional hydrological sink for surface and groundwater, and maps include it in the Death Valley Regional Groundwater Flow System (page 3-28, figure 3-7 and page 3-30,

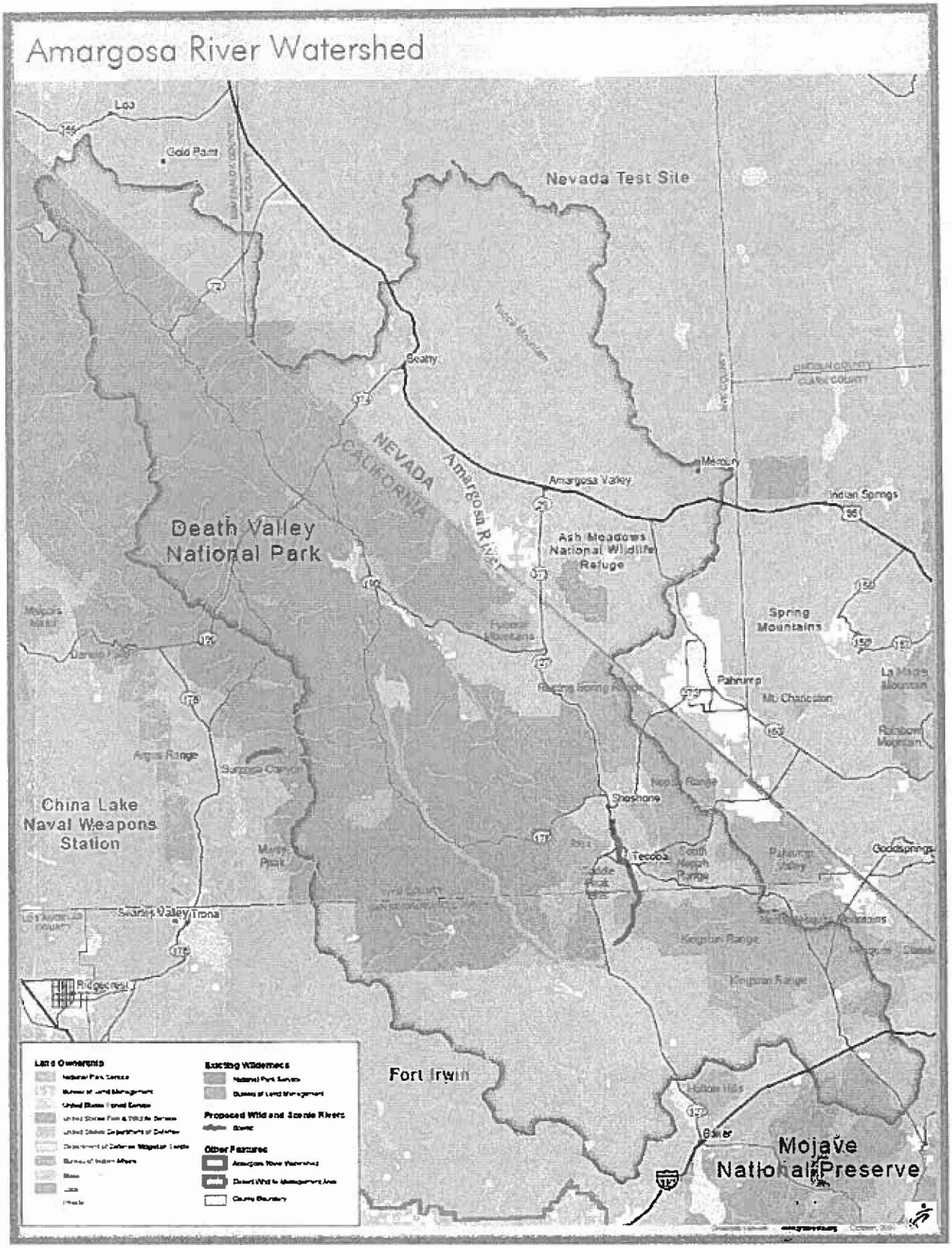
Figure 3-8), but still barely mentions California in groundwater impacts from the repository and omits it from maps of affected areas (page 3-33, Figure 3.9).

Furthermore, the draft SIES actually goes so far as to state, on page S-23, "*There are no perennial streams or other permanent surface water bodies in the region of influence, and precipitation and runoff are seldom sufficient to generate flowing water in drainage channels.*" In addition to the vast and complex spring systems mentioned above in Death Valley, Amargosa Valley and the Ash Meadows/Devils Hole area, the Amargosa River drainage flows on both sides of Yucca Mountain, and parts of it flow above ground year round. Figure S-11 documents flow, but for some strange reason, omits identifying the river.

Rivers in the west are complex, and can fluctuate above and below ground even at different times of day. They are complex and poorly understood under the best of circumstances. The Amargosa River is considered the third largest in the west, is currently being considered by Congress for Wild and Scenic River status, and has its own protection agency, the Amargosa Conservancy. We are providing for you as part of these comments a detailed map showing the Amargosa River Drainage, with Yucca Mountain near its apex, which was prepared for the Amargosa Conservancy. As for DOE's presumption of insufficient precipitation to fill ditches, we offer a few more photographs of flood damage in the Yucca Mountain area in August, 2005.



Top left: California Highway 190, between Death Valley Junction and Furnace Creek, in August, 2005.
Bottom left: The Furnace Creek Inn, employee vehicles full of debris, and the severed roadway.
Bottom right, Damaged vehicle on Badwater Road.
Over 160 miles of road were washed out or damaged within a 45 minute period from 1/3 of an inch of rain. Many vehicles were totaled and two people were killed. This road was closed for over a year while repairs were made.



Unprecendented nomination of Death Valley Regional Water Groundwater Flow System for National Nuclear Sacrifice Zone

Page I-12 of the SEIS states, *"Groundwater beneath Yucca Mountain flows into a closed, sparsely populated hydrogeologic basin. A closed basin is one in which water introduced into the basin by*

precipitation cannot flow out of the basin to any river or ocean. This closed basin would provide a natural barrier to a general spread of radionuclides if radioactive contamination were to reach the groundwater."

A 1951 Atomic Energy Commission document described the residents of the Nevada Test Site area as "a low-use segment of society." DOE and EPA documents now describe them as "Potential Human Dose Receptors". However, this SIES is the first document, to our knowledge, that suggests that this entire closed basin is expendable if there is an "OOPS" at Yucca Mountain, simply because it is part of the Basin and Range formation. It is thousands of square miles in scope and contains a number of communities, two states, the largest National Park in the lower 48 states and the entire Timbisha Shoshone Tribe, thousands of dairy cows supplying milk to many of the nation's children in the southwest, and many endangered species of plants and animals, as well as Yucca Mountain itself, a sacred and beloved site for thousands of years.]

2 [**Inadequate analysis of effects of groundwater pumping on groundwater migration**

According to past research by the USGS and others, an upwardly moving gradient exists in the LCA, which causes LCA water to move upward into the volcanic aquifers in the vicinity of Yucca Mountain. The DOE argues that the upper gradient will prevent migration of radionuclides from the repository to the LCA. While this seems currently true, H🌎ME believes that this upper gradient could be reversed even in the near future by regional groundwater pumping, both from the LCA and volcanic aquifers, and that it is fragile enough to be very unpredictable over time. We believe that DOE's barrier plan to contamination dispersal places far too much weight on this presumption, and that if reversal of flow does take place, there is no realistic mitigation.

Already, the Amargosa Valley area is over-pumped by the dairy industry, which provides milk all over the southwestern US. This industry is likely to double in size in just the next few years, yet alone the next million. Other development is imminent as well, even without the Yucca Mt. Repository and its satellite industries being promoted by Nye County, Nevada.

DOE maintains that future effects of groundwater pumping are highly speculative, and need not be considered in any NEPA analysis. H🌎ME strongly disagrees, and feels that the draft SEIS is incomplete and inadequate in this regard. The SEIS should include analysis of potential groundwater pumping in the region and radionuclide migration, and explain regulatory measures needed to maintain the upper gradient.]

3 [**Inadequate analysis of socio-economic impacts**

DOE's presumption that California is outside the "region of influence" for socio-economic impacts analysis under NEPA is not substantiated by the facts, and such an analysis continues to be incomplete and entirely inadequate. Yucca Mountain lies about 17 miles from the Nevada/California line and Death Valley National Park. Death Valley National Park had approximately 950,000 visitors last year, according to Caltrans road counters. The entire region relies heavily on tourism revenues from Park visitors, both in terms of the local population and tax revenues that support state and county government. Other regional attractions, such as the Tecopa health spas and spin-off health services, China Date Ranch, and outdoor recreation all rely on the perception of environmental health, purity of water and safe local transportation.

Unless and until the proposed Caliente railroad is built, the current nuclear waste routes (for low-level and WIPP wastes) of Highways 127, 178 and 160 seem to be the actual default, even though neither California nor Nevada have designated them as such. The entire burden of shipments funnels from all over the country to this area. Local businesses, government and residents are concerned about reduced tourism revenues, as well as decreases in real and business properties, from repository

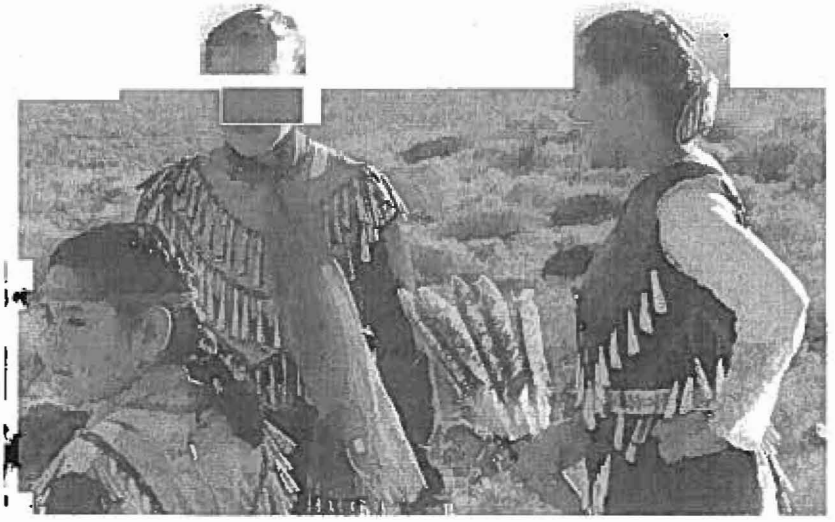
operations and high-level nuclear waste transportation. Therefore, Inyo County, California, should be considered within the "region of influence" for socio-economic impacts analysis because of its proximity to the site.

In Nevada, DOE still does not place adequate weight on the impacts to the dairy industry in the Amargosa Valley, the largest agricultural employer in the state of Nevada, and a large provider of organic and non-organic milk all over the region. The dairy relies on wells very close to Yucca Mountain for its enormous water consumption, and relies on the public's belief in pure water for its organic milk market. With massive nuclear waste transportation visible from the dairies, and above ground nuclear waste storage up-gradient from water supplies in a largely gravel fill valley, negative socio-economic impacts on the dairies are likely from the day the waste starts to roll. The SEIS documents do not give sufficient weight to these concerns in their analysis, in our opinion.

4 **Inadequate analysis of impacts to the Timbisha Shoshone Tribe**

The Timbisha Shoshone Tribe within and without Death Valley will be highly impacted from the Yucca Mountain Project. Tribal lands along Highway 127, recently ceded by the federal government and designated for economic development, are adjacent to potential trucking routes and the potentially contaminated Amargosa River. Residential lands within the Park receive their drinking water from springs that will be impacted if the Lower Carbonate Aquifer is contaminated. Additional lands are designated for cultural resources, such as harvesting medicinal plants, foods and basketry materials. The Timbisha tribe and other Western Shoshone tribes have conducted spring renewal ceremonies on Yucca Mountain for an unknown time, and continue to do so into the present on the western portion they are still able to access. The final EIS should assess and analyze impacts to the tribe's drinking water supply, impacts from truck transport of nuclear waste through tribal lands, socio-economic impacts, impacts to cultural resources, and environmental justice issues.

Right: Western Shoshone girls conducting ceremonial dances at Yucca Mountain in recent years.



5 **Inadequate analysis of Land Ownership issues**

The SEIS correctly notes that the land proposed for withdrawal is currently administered by the Bureau of Land Management and the US Air Force. However, it fails to mention the ongoing dispute and litigation involving the United States' violation of the 1863 Treaty of Ruby Valley with the Western Shoshone which clearly defines territorial borders for their nation of Newe Sogobia as well outside the proposed land withdrawal. This treaty was fully ratified by Congress, and is legally "the supreme law of the land". In April of 2004, the United Nation's Committee to End Racial Discrimination upheld the Shoshone claim in a record decision, and their declaration clearly identifies the Yucca Mountain Repository as one of several ongoing serious human rights violations by the United States against the Western Shoshone Nation. The final SEIS should address the issue of what the impacts to the proposed repository will be if the US cannot prove clear title to the land it wishes to withdraw, during the NRC licensing process.

6 **Transportation, Aging, and Disposal (TAD) Canisters**

All commercial reactors in California are either planning to transfer or have transferred all or a portion of their spent fuel into dry cask storage. All four California commercial reactor sites (Humboldt Bay, Rancho Seco, Diablo Canyon, and San Onofre) may therefore have problems with the proposed TAD system, and it would not be applicable at a number of other reactor sites nation-wide as well. About 10% of all irradiated fuel rods have broken, and are not compatible with the TAD. The final EIS should analyze how these broken rods will be shipped to the repository.

While the TAD system seems good in theory, it is completely undeveloped and untested thus far. The Final EIS should analyze how the TAD system will interface with existing dry cask storage systems at reactor sites, as well as analyze its costs at reactor sites. The TAD canister system could also significantly increase workers' radiological exposure and risks at reactor sites and at Yucca Mountain. The Final SEIS should thoroughly assess the risks and impacts from using the TAD system to workers, surrounding communities, the environment, and populations near reactor sites and along transportation corridors. Any TADs shipped to Yucca Mountain must have a thorough inspection procedure by the DOE upon arrival. Numerous nuclear waste shipments to WIPP have had documented problems in just the last year, and Yucca Mountain shipments have much more dangerous potential.

Once fully designed, the TAD canisters should be thoroughly and fully tested for failure during loading, transportation and emplacement at Yucca Mountain. The final SEIS should provide information about full-scale testing procedures. Finally, the final SEIS should provide analysis of alternative methods for situations in which the TAD system is not possible.

7 The draft SEIS also does not describe how DOE plans to comply with requirements of the Resource Conservation and Recovery Act (RCRA) as it applies to burial of hazardous metals that can be released to groundwater. The accumulated metals would largely be derived from corrosion of the 11,000 waste packages over time, and the metals involved would render the region highly contaminated, even without the threat of radioactivity.

8 **Inadequate analysis of proposed repository capacity**

This Draft SEIS increases the capacity of Inventory Modules 1 and 2 to 130,000 MTU commercial spent nuclear fuel rather than 105,000 MTU in the previous expanded capacity case. The Proposed Action for the Draft SEIS is for the statutory limit, a 70,000 MTU repository, with commercial spent fuel being 63,000 MTU of the total. The Draft SEIS does not provide an underground layout that indicates how 130,000 MTU could be accommodated, nor does it describe what site characterization information exists that demonstrates 130,000 MTU could be safely accommodated. If DOE is going to include an expanded repository capacity as a possible future action, it should determine on a technical basis what the safe capacity of a Yucca Mountain repository could be and include that in the analysis of cumulative impacts.

9 **Inadequate analysis of MRS-type storage for newer hotter irradiated nuclear fuel**

H(S)ME believes that the addition of an above Aging Facility for dry cask storage is an unnecessary dangerous and illegal departure from the deep geological storage mandated by the Nuclear Waste Policy Act. The "aging pads" are essentially a Monitored Retrievable Storage (MRS) facility, which the Nuclear Waste Policy Act prohibits from being sited in Nevada. While there may be a need for some reasonable level of temporary storage at the repository surface facility, a capacity of 21,000 MTU of commercial spent nuclear fuel clearly has a different intent altogether.

The National Academy of Science (NAS) has already recommended that the oldest spent fuel be shipped first to the repository, because fuel that has aged fifty or more years contains significantly less amounts of Cesium-137 and Strontium-90. Waiting for these radioactive isotopes to further decay prevents the most substantial risk to workers who package the spent fuel, transport it and prepare for emplacement, as well as the general public every inch of the way along the routes. H@ME recommends that the final EIS incorporate the NAS's recommendation for the oldest fuel to be shipped first to Yucca Mountain, and avoid altogether the need for repackaging or storing hotter fuel on aging pads prior to emplacement.

10 **Inadequate analysis of potential hazards from military overflights and airspace jurisdiction**

The Yucca Mountain area is surrounded by bases and airspace used for military flight training, which could create an incompatible hazardous environment, particularly for above ground handling or storage facilities. DOE remarks in the draft SEIS regarding potential airspace restrictions around the repository precluding the need for aircraft accident analysis are not substantiated. Future agreements between the Air Force, the Nevada Test Site and the Office of Civilian Radioactive Waste Management seem very uncertain at this time. Therefore, for purposes of this SEIS, DOE should have provided a comprehensive analysis of military aircraft crash events at the repository site.

11 **Inadequate analysis of baseline soil and water data for future comparison**

Given that the Yucca Mountain repository is being sited in an area previously contaminated by Nevada Test Site activities since 1951, future contamination and exposures can only be identified if a baseline exists of air, water and soil now. The Draft SEIS does not mention a detailed radiological survey of the entire proposed land withdrawal area. After several years of unsuccessful efforts to convince the DOE and other agencies to conduct such baseline studies to assist future generations with dose reconstruction, H@ME selected water as the most likely point of exposure and conducted independent water baseline radiological analysis in 2006.[1] Furthermore, care was taken to provide baseline data on radionuclides that would be specific either to the Nevada Test Site or to the Yucca Mountain repository in the future, to better determine point of origin and responsibility for any futue radioactive contaminants.

In regards to air and soil, H@ME's simple Rad Alert device that measures alpha, beta and gamma counts per minute routinely measures higher counts on the western flank of Yucca Mountain than it does twenty miles to the south. The Timbisha Shoshone Tribe has also conducted a soil baseline sampling study which is not referenced in the SDEIS. Since much of the land is in Area 25 of the Nevada Test Site which was previously used to test experimental nuclear rocket engines, DOE should provide current data and analyses demonstrating that there is no residual contamination of the site before it is separated from the Nevada Test Site whose responsibility it would be to carry out any needed decontamination. Offsite gamma contamination from a rocket motor test is known from at least one test in 1968, and there was a later report in the media that some irradiated rocket fuel had been buried somewhere in Area 25. At the time, DOE deferred any search for the missing material.

Draft Rail Corridor/Alignment Supplemental Environmental Impact Statements

12 **Inadequate analysis of reasonable alternatives to the Caliente Rail Corridor**

H@ME believes from much of the uncertainties stated in the draft SEIS associated with cost, engineering issues, and land-use conflicts such as grazing allotments that to implement the proposed Caliente railroad would take a much longer timeframe than proposed, or not be possible at all. This seems self-evident from the documents, and the draft Rail EIS even states that if the railway is not completed, that the future is "uncertain" with regards to transportation of nuclear materials to Yucca

[1] Viereck, Hadder and Rice for H@ME, "The Yucca Mountain Legacy Project, Phase 1: Groundwater Contaminant Baseline Data for the Yucca Mountain Region", May 2006.

Mountain. This then begs the question why the draft Rail Corridor/Alignment EIS contains no analysis for a mostly truck shipping scenario. This should be considered a reasonable alternative; given the uncertainties regarding the TAD canister, the Caliente Rail Corridor, and Clark County's steadfast opposition to nuclear shipments through Las Vegas, truck transport appears to be the most probable method of transporting nuclear materials to Yucca Mountain.

13 **Potential truck transportation of nuclear materials on California Highways 127 and 178**

California Highways 127 and 178 began originally as Indian trails, and then became around 150 years ago wagon routes across the desert. They have a thin veneer of asphalt that is damaged by rainfall several times a year. They are not engineered roads, and could not withstand a prolonged truck shipping campaign of nuclear waste. H(S)ME has conducted a hazardous materials transportation study[2] of Highways 127 and 178 for emergency service providers in the past, in consultation with Caltrans, and is familiar with many of these issues. Current levels of shipping to and from the dairies, the cinder mine, and the US Ecology hazardous waste site in Amargosa Valley as well as the Nevada Test Site are already taking a toll on the roads that Caltrans cannot afford to keep up with now. These narrow two-lane highways are totally inadequate for a shipping campaign of this magnitude, with narrow or non-existent shoulders, no passing lanes, rest stops or turnouts. The Amargosa River crosses back and forth under Highway 127 thirteen times between Baker and Lathrop Wells. The roads are already crowded with tourists unfamiliar with the area in huge RVs for nine months of the year.

In addition to H(S)ME's study, Inyo County, California, has conducted a number of extensive studies on transportation concerns along Highways 127 and 178, ranging from weak points in road design, to traffic volume to accident location and frequency. DOE should avail itself of all of this important information when analyzing a mostly truck shipping scenario in the final Rail SEIS.

14 **Inadequate analysis of California impacts from the movement of construction equipment**

The draft Rail EIS gives no impact assessment of construction equipment and personnel traveling on California highways for construction of the portion of the Caliente railway which parallels Nevada Highway 95, south from Tonopah, Nevada to the repository site. H(S)ME believes it very likely that DOE contractors will move construction equipment along California Highways 127 and 178 because of close proximity. This has the potential to increase the volume of traffic on these rural highways and impact air quality. The DOE should analyze the impacts of increased traffic volumes to Inyo County on Highways 127 and 178 in the final Rail EIS.

15 **Inadequate analysis of severe accidents and acts of terrorism**

Two major California highway accidents that occurred this year (one in the Bay Area and the Santa Clarita tunnel fire) are being investigated to determine whether these accidents may have resulted in fire temperatures and durations that approached or exceeded requirements for transporting irradiated fuel. Also, many of the 16 severe accident scenarios that were examined in the National Academy of Sciences (NAS) 2006 study on spent fuel transport safety occurred in California. Certain segments of possible routes in California could provide conditions in which an accident or terrorist attack could exceed the spent fuel packaging performance requirements. The SEIS risk analyses should include potential consequences of a severe accident caused by human error or terrorist attack, including extreme, long duration fire conditions that exceed package performance requirements.

The Draft SEIS does not consider "worst-case" accidents in its NEPA analysis because such combinations of factors were considered "not reasonably foreseeable." In our opinion, this is irresponsible. The Draft SEIS acknowledges that clean-up costs after a very severe transportation

[2] Jennifer O. Viereck for H(S)ME, "Hazardous Materials Transportation on CA Routes 127 and 178 Within the Southern Inyo Fire Protection District", Sept. 2006, amended Dec. 2006.

incident could range from $300,000 to $10 billion. Given the volume of shipping proposed, and the hotter fuel currently being considered for transportation, H(O)ME believes that the final SEIS should evaluate the impacts from a credible worst-case transportation accident or terrorist attack, as well as other accident scenarios.]

16 [**No final federal Environmental Protection Agency compliance standard**
The final U.S. Environmental Protection Agency (EPA) rule regarding acceptable radiation dose rates at the compliance point (located near Nevada Test Site Gate 5-10) has not yet been finalized. Furthermore, H(O)ME believes that any final rule that is based on such a low rate of water consumption per individual is wholly inadequate in this desert climate. Any health or public agency recommends a consumption level of twice that amount for even a sedentary indoor lifestyle. Until a final EPA rule is adopted, it is impossible for H(O)ME or anyone else to evaluate the DOE's claims regarding safe repository operation.

17 [**NEPA Procedural Concerns regarding availability of hearings and SEIS documents**
The intent of the NEPA process is to maximize public input concerning potential environmental impacts of federal projects. California will be highly impacted from the Yucca Mountain Project, specifically from the transportation of nuclear materials in the state. It is estimated that 7.5 million people in California live within one mile of federal interstates that will be used for shipment, both for shipments from the five reactor sites identified within California, and for shipments originating elsewhere. While we are pleased that the DOE has finally scheduled a public meeting in California after some twenty years, one meeting in a very remote part of the state for all three NEPA draft SEIS documents is completely inadequate.]

18 [Furthermore, although H(O)ME's California office submitted a written request at the Amargosa Valley meeting for hard copies of the SEIS documents, and made a second request by telephone to the Las Vegas phone order line, we never received the documents, or even a follow-up phone call to explain the shortage. H(O)ME is a widely recognized organization that has participated in the Yucca Mountain hearing and comments process for many years. To be unable to receive a hard copy of the documents for review during the comment period despite multiple requests is really unacceptable.]

Sincerely,

Jennifer O. Viereck

Jennifer Olaranna Viereck
Executive Director